



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

31780 7590 07/11/2008

ERIC ROBINSON  
PMB 955  
21010 SOUTHBANK ST.  
POTOMAC FALLS, VA 20165

|                |              |
|----------------|--------------|
| EXAMINER       |              |
| FULK, STEVEN J |              |
| ART UNIT       | PAPER NUMBER |
| 2891           |              |

DATE MAILED: 07/11/2008

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/775,328      | 02/11/2004  | Kiyoshi Kato         | 0756-7254           | 8545             |

TITLE OF INVENTION: SEMICONDUCTOR DEVICE COMPRISING A LIGHT EMITTING ELEMENT AND A LIGHT RECEIVING ELEMENT

| APPLN. TYPE    | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO           | \$1440        | \$0                 | \$1440               | \$1440           | 10/14/2008 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

**HOW TO REPLY TO THIS NOTICE:**

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

## PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to:** **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax (571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

31780      7590      07/11/2008

**ERIC ROBINSON**  
**PMB 955**  
**21010 SOUTHBANK ST.**  
**POTOMAC FALLS, VA 20165**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

### **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/775,328      | 02/11/2004  | Kiyoshi Kato         | 0756-7254           | 8545             |

TITLE OF INVENTION: SEMICONDUCTOR DEVICE COMPRISING A LIGHT EMITTING ELEMENT AND A LIGHT RECEIVING ELEMENT

| APPLN. TYPE    | SMALL ENTITY | ISSUE FEE DUE  | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|--------------|----------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO           | \$1440         | \$0                 | \$1440               | \$1440           | 10/14/2008 |
| EXAMINER       | ART UNIT     | CLASS-SUBCLASS |                     |                      |                  |            |
| FULK, STEVEN J | 2891         | 257-082000     |                     |                      |                  |            |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,  
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

4a. The following fee(s) are submitted:

- Issue Fee  
 Publication Fee (No small entity discount permitted)  
 Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- A check is enclosed.  
 Payment by credit card. Form PTO-2038 is attached.  
 The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.  b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO.        |
|--|-------------|----------------------|---------------------|-------------------------|
| 10/775,328   | 02/11/2004  | Kiyoshi Kato         | 0756-7254           | 8545                    |
| 31780  | 7590        | 07/11/2008           | EXAMINER            |                         |
| ERIC ROBINSON<br>PMB 955<br>21010 SOUTHBANK ST.<br>POTOMAC FALLS, VA 20165 |             | FULK, STEVEN J       |                     |                         |
|  |             | ART UNIT             |                     | PAPER NUMBER            |
|  |             | 2891                 |                     | DATE MAILED: 07/11/2008 |

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 121 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 121 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

|                               |                        |                     |  |
|-------------------------------|------------------------|---------------------|--|
| <b>Notice of Allowability</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                               | 10/775,328             | KATO ET AL.         |  |
|                               | <b>Examiner</b>        | <b>Art Unit</b>     |  |

STEVEN J. FULK  
2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 4/25/08.
2.  The allowed claim(s) is/are 1-11 and 16-27.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some\*    c)  None    of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

**DETAILED ACTION**

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows: in the claims, cancel claims 28-38.

***Response to Arguments***

2. Applicant's arguments with respect to independent claims 1-10 have been fully considered and are persuasive. The rejection of claims 1-11 and 16-27 has been withdrawn.

***Allowable Subject Matter***

3. This application is in condition for allowance except for the presence of claims 28-38 directed to an invention non-elected without traverse. Accordingly, claims 28-38 have been cancelled per the Examiner's Amendment above.

4. Claims 1-11 and 16-27 are allowed.

5. The following is an examiner's statement of reasons for allowance: a search of the prior art failed to disclose or reasonably suggest a semiconductor device, or electronic equipment comprising the semiconductor device, comprising: a first semiconductor element including at least one thin film transistor and a light emitting element electrically connected to the first semiconductor element; a second

semiconductor element including at least one thin film transistor and a light receiving element electrically connected to the second semiconductor element; a first insulating film and a second insulating film formed between the first semiconductor element and the second semiconductor element; a resin film formed between and in contact with the first insulating film and the second insulating film; wherein the light emitting element comprises a first electrode, a second electrode, and an electro-luminescent layer formed between the first electrode and the second electrode, and wherein the first electrode, the electro-luminescent layer, and the second electrode are overlapped each other, as recited by claims 1, 3, 5, 7, 9 and 11.

A search of the prior art also failed to disclose or reasonably suggest a semiconductor device, or electronic equipment comprising the semiconductor device, comprising: a first semiconductor element including at least one thin film transistor and a light emitting element electrically connected to the first semiconductor element; a second semiconductor element including at least one thin film transistor and a light receiving element electrically connected to the second semiconductor element; a resin film formed between the first semiconductor element and the second semiconductor element an insulating film formed between the first semiconductor element and the second semiconductor element; a metal oxide partially formed between the first semiconductor element and the second semiconductor element, wherein the resin film is interposed between the insulating film and the metal oxide film; wherein the light emitting element comprises a first electrode, a second electrode, and an electro-luminescent layer formed between the first electrode and the second electrode, and

wherein the first electrode, the electro-luminescent layer, and the second electrode are overlapped each other, as recited by claims 2, 4, 6, 8, 10 and 11.

Shimoda (WO 00/57489) discloses a semiconductor device comprising: a light emitting element (for example, fig. 1, E35 of '776) electrically connected to first semiconductor element including at least one thin film transistor (col. 4, lines 41-44), wherein the signal from the thin film transistor is inputted to the light emitting element; a light receiving element (D35) electrically connected to a second semiconductor element including at least one thin film transistor; a resin film (col. 3, lines 9-11, adhesive film between layers of 11-15 fig. 1; col. 6, line 67 - col. 7, line 5, adhesive disclosed to be resin) formed between the first semiconductor element and the second semiconductor element; wherein the first semiconductor element and the second semiconductor element are stacked with an interface (layer 14) and an interlayer insulating film interposed there between (fig. 1, window T between E35 and D35; col. 5, lines 10-11, window T in layer 14 is made of glass and is formed between layers 15 and 13, thus an interlayer insulating film); however, the reference does not disclose a first insulating film and a second insulating film formed between the first semiconductor element and the second semiconductor element, and a resin film formed between and in contact with the first insulating film and the second insulating film; nor does the reference disclose a metal oxide partially formed between the first semiconductor element and the second semiconductor element, wherein the resin film is interposed between the insulating film and the metal oxide film.

Ovshinsky et al. '471 discloses a semiconductor device (figs. 6A & 6B; col. 18, line 58 – col. 19, line 66) comprising a stacked thin film light emitting element (layer 158 of device 232) and a light receiving element (layer 42 of device 234), with an adhesive film (leveling film, 220) and an insulating film (236) formed between semiconductor circuits, but the reference does not teach the light emitting element and the light receiving element to each be electrically connected to a thin film transistor, nor does the reference teach the stacked elements to have a resin formed between them.

Kohashi '056, Thillays '877, Miyoshi et al. '821, Stein '695, Yasumoto et al. '083, Lebby et al. '245, Vu et al. '953, Hayashi et al. '699, Spaeth et al. '559, and Haas et al. '214 disclose stacked optoelectronic coupling devices, but the references do not teach the light emitting element and the light receiving element to each be electrically connected to a thin film transistor, nor does the reference teach stacked elements having a resin formed between them.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN J. FULK whose telephone number is (571)272-8323. The examiner can normally be reached on Monday through Friday, 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven J. Fulk  
Patent Examiner  
Art Unit 2891  
July 3, 2008

/Douglas M Menz/  
Primary Examiner, Art Unit 2891  
7/7/08